

# Strategic Weapons in the 21<sup>st</sup> Century

**CGSR Summary Report**  
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LAWRENCE LIVERMORE NATIONAL LABORATORY

# **Strategic Weapons in the 21<sup>st</sup> Century**

## ***Deterrence and Assurance in a Changed and Changing World***

### **CGSR Summary Report**

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### **Introduction**

Los Alamos and Lawrence Livermore National Laboratories hosted the tenth annual Strategic Weapons in the 21<sup>st</sup> Century Conference (SW21) on 21 January 2016 to reinforce the national commitment to nuclear deterrence. The event has been successful over the years in drawing together a diverse, high-level group of policy makers and experts from multiple disciplines to engage in informed dialogue on topics related to strategic weapons in national and international security.

The 2016 SW21 conference focused on deterrence and assurance in a changed and changing world. Participants examined the deterrence strategies of Russia, China, and regional challengers such as North Korea and Iran. Discussions then examined the implications of these strategies for the deterrence, nuclear infrastructure, and hedge strategies of the United States and its allies. The conference's goal was to set out a clear understanding of the issues facing the strategic community rather than pursue consensus on the various approaches to address those issues.

This LLNL summary report is provided to highlight the thematic content of discussions while maintaining a non-attribution policy for all participants. The content of the report represents the views expressed by various conference participants, not the views of Los Alamos National Laboratory, Lawrence Livermore National Laboratory, or the U.S. Government.

## **The Deterrence Strategies of Russia, China, and Other Regional Actors**

For the last 15 years, the United States has been focused on combating violent extremism around the globe and the U.S. Government's resources have been primarily directed to address this threat. During that time, potential U.S. adversaries have studied the U.S. way of war and have been developing strategies and capabilities to deter and defeat a conventionally superior major power. These strategies involve nuclear coercion and brinksmanship intended to drive wedges in U.S. security coalitions and force the U.S. to act alone without the support of its regional allies.

### ***Russian Military Reform, Doctrinal Evolution, and Security Strategy***

At the end of the Cold War, many hoped for a new era in Western-Russian relations. But over the last 15 years, President Vladimir V. Putin and other Russian leaders have opted for a different, revisionist path. Driven either by fear of NATO, geopolitical opportunities, or perhaps a combination of both, Russia has sought to reassert itself on the world stage and rewrite the rules of the international order in Europe. Unfortunately, many of the changes being made to Russia's security strategy, though justified by the Russian government as a way to ensure Russia's defense, are seen by its neighbors as offensive and destabilizing.

To help achieve its geopolitical and security objectives, the Russian military has engaged in an ongoing comprehensive military reform with a goal of preparing its military for 21<sup>st</sup> century conflict. These reforms have come in two flavors: doctrinal reforms and reforms modernizing Russia's conventional and nuclear forces. Russia's force modernization efforts have focused on developing rapid reaction heavy forces that can quickly move to engage in low-to-high intensity conflict in Russia's periphery. These rapid reaction forces are supported by the Russian air force and the Russian military's anti-access area denial capabilities that can threaten the movement of NATO or U.S. naval, air, and ground forces. This conventional force modernization is further supported by Russia's modernization of its strategic and non-strategic nuclear forces.

To ensure that any potential conflict with Russia's adversaries occurs under Russia's nuclear shadow, Russia has developed a new military doctrine that reduces the threshold for the use of non-strategic nuclear weapons. Russian military leaders have openly discussed the possibility of employing nuclear weapons to signal resolve and stop hostilities on terms favorable to Russia, though it is unclear if this is institutionalized in their doctrine or operational planning. While the reliance on nuclear weapons to account for conventional inferiority has been part of Russia's security strategy since the end of the Cold War, the lowered threshold for nuclear use is unique to the 2000, 2010, and 2014 Russian Military Doctrines. Furthermore, Russia has publically utilized limited nuclear use in war-gaming exercises to demonstrate their lowered threshold.

Taken together with Russia's actions in Ukraine, Georgia, and Syria that utilized unconventional warfare, Russia's doctrinal and military transformations signal the development of a coercion strategy that seeks to influence the decision cycle of Russia's European neighbors to achieve Russia's foreign policy objectives, all while casting the nuclear shadow over any conventional conflict. Russia's new security and foreign policy strategies present NATO with a significant set of strategic problems to address.

### ***Balancing Cooperation and Competition with China***

In contrast to the relationship the United States has with Russia, the U.S.-China relationship has not been predominantly defined by conflict or nuclear competition. China and the United States have a significant trade relationship and arguments were presented that neither state would benefit from increased conflict between the two. Despite the mutually beneficial economic U.S.-China relationship, future relations will likely exhibit components of both cooperation and competition considering China's longstanding maritime disputes with America's partners and allies in the region.

Though peace and development remain the overarching themes that define China's goals, Chinese leaders see conflict as undesirable but possible. Some analysts even argue conflict may be inevitable. Taiwan, the South China Sea, East China Sea, or border disputes remain the most plausible scenarios for conflict in China's periphery. In preparation for possible conflict, China is pursuing a long-term military modernization strategy to win local conflicts under conditions of "informatization." The U.S. pivot towards Asia coupled with the increased presence of China's navy in the western Pacific allows for the possibility of increased tension, which is exacerbated by China's development of artificially constructed islands in the South China Sea and militarization of disputed island chains.

Both China's conventional and nuclear forces are being modernized. China's nuclear forces have become more survivable by making the ICBMs in its arsenal mobile and reducing the People's Liberation Army Rocket Force's reliance on liquid-fueled silo-based systems. Its conventional forces are focused on enhancing the anti-access area denial, asymmetric, and unconventional warfare missions to emphasize capabilities that could keep the U.S. military out of China's regional conflicts.

Though China retains a stated no-first-use policy (though speculation exists over what this policy actually is, and how China might respond in a possible conflict) and maintains that it would not use nuclear weapons against a non-nuclear state, many parts of China's nuclear program remain troubling. Chief among these issues is the ambiguity regarding lines of communication and overlap between Chinese conventional and nuclear command and control. In a worst case scenario, the United States might misinterpret activities that China intended to be seen like signals of resolve as preparations for a preemptive attack. As China continues to expand its ballistic missile submarine fleet, questions regarding the security and reliability of China's nuclear command and control may grow.

### ***Evolving North Korean Nuclear Strategy***

In U.S. security planning, North Korea has evolved from being a proliferation challenge to a military threat and will remain a security challenge in the foreseeable future, especially considering the threat it poses to two of America's key allies, Japan and South Korea. By some estimates, North Korea's fissile material stocks may be sufficient for a significant nuclear threat. Advancements in North Korea's missile program will eventually give Pyongyang the ability to compromise the homelands of the United States in addition to those of Japan and South Korea. Furthermore, shifts in nuclear doctrine are moving Pyongyang toward a nuclear war-fighting strategy. This shift likely occurred in hopes that it would help deter a wider range of conflict as well as provide the capability for nuclear coercion and compellence—serving as a tool to create divisions in the U.S.-Japan-ROK Northeast Asian security architecture.

### ***Iranian Challenges After the JCPOA Agreement***

While Iran is unlikely to see conventional conflict with the United States and its allies as a desirable course of action, it has proven itself comfortable to engage in unconventional conflict using both military and non-military tools, providing a vexing problem set for U.S. strategic planners. The Iranian regime's role as a regional provocateur and revisionist power underscored the concerns behind its nuclear program that led to the Joint Comprehensive Plan of Action (JCPOA).

While the 2015 JCPOA agreement will limit Iran's ability to acquire a nuclear weapon in the near future, Iran remains a challenge to the regional stability of the Middle East. While it is unclear if Iran will cheat on the agreement, some analysts posit that Iran is likely to pursue covert research activities that will be difficult to identify. The future of Iran's nuclear program in the late stages of the JCPOA remains ambiguous to many observers.

Iran's actions may be understood by viewing them through the framework in which it sees its precarious position in the region. The Arab Spring has upended the established order in the Middle East and increased the Shia-Sunni rift in the Islamic world, of which Iran is part of the 15% Shia minority. This sectarian division among the countries in the region has the potential to escalate into additional conventional conflict—especially between Saudi Arabia and Iran as their involvement in the Syrian and Yemeni conflicts could put their militaries into conflict with each other.

### **The Implications for the U.S. Nuclear Deterrence Posture, the Nuclear Stockpile, and Nuclear Enterprise**

The mission of the U.S. nuclear deterrent remains straightforward: to deter nuclear attacks against the U.S. homeland and U.S. allies abroad, to ensure strategic stability, and to assure U.S. allies. The posture of the nuclear triad allows the United States to showcase the credibility of its deterrent and its international commitments abroad. In a world with emerging and unrelenting threats, however, many question if the United States has the right force structure, military posture, technical workforce, and nuclear infrastructure to deter and respond to today and tomorrow's threats.

These concerns can be analyzed by considering three questions:

- 1) Does the United States have sufficient strategic capabilities to deter potential adversaries from attacking the U.S. homeland or that of its allies?
- 2) If new capabilities are needed, does the United States have the infrastructure, workforce, and resources to develop them in a timely manner?
- 3) What is the right combination of strategic messaging, declaratory policy, exercises, and strategy to ensure deterrence and assurance?

***Does the United States have sufficient strategic capabilities to deter potential adversaries from attacking the U.S. homeland or that of its allies?***

Even in light of the more complicated security environment, it is important to remember the United States is a responsible nuclear power and will not engage in tit-for-tat development of destabilizing capabilities solely because a potential adversary pursues them. The nuclear triad remains a credible deterrent of attacks on the U.S. homeland and a reminder of America's security guarantees to its allies. There are questions, however, regarding the credibility of the U.S. nuclear triad in extending the nuclear umbrella to our allies in East Asia and in NATO.

Though most conversations focused on the credibility of nuclear capabilities, conventional and defensive capabilities must be evaluated as well. The integration of planning between the conventional and nuclear components of the U.S. military along with the hardening of systems against EMP and other nuclear effects should also be continuously evaluated to assess their value in deterrence. Ballistic and cruise missile defenses also have the potential to play a leading role in U.S. deterrence and assurance strategies.

***If new capabilities are needed, does the United States have the infrastructure, workforce, and resources to develop them in a timely manner?***

If new capabilities are required, it is unclear to some participants if the nuclear enterprise currently has the bandwidth and resources to develop those capabilities while modernizing the current stockpile. Much of the nuclear enterprise's infrastructure dates back to the early days of the Cold War and is competing with other programmatic priorities for resourcing. This is a concern for both the National Nuclear Security Administration (NNSA) and the Department of Defense (DoD).

DoD is primarily concerned with the aging delivery platforms of the nuclear deterrent. Each of the delivery platforms of the nuclear triad will require modernization or replacement in the coming decades. The fiscal bow wave associated with the acquisition of the Ohio Class replacement, LRSB, and Ground Based Strategic Deterrent will introduce tremendous pressure to a DoD budget already strained from the effects of military campaigns in the Middle East and Afghanistan over the last decade and a half.

While the recapitalization of NNSA facilities and modernization of the current stockpile will remain an enduring priority in the coming decades, developing the technical and regional expertise in the workforce of NNSA and the other government agencies responsible for the strategic mission is also of the utmost importance. While technical and regional experts exist independently, it is imperative to develop the next generation of security professionals that "speak both languages."

Maintaining the expertise and institutional knowledge that the last generation of nuclear technical experts possess remains a priority, but there is disagreement on what approach to take in order to maintain it. There is broad agreement that the nuclear enterprise must be flexible enough to promptly respond to technological surprise from disruptive technologies. What is unclear, however, is if the national laboratories should practice developing prototypes of nuclear capabilities to hone their skills or if there are alternative ways to maintain expertise that do not require the development of new systems.

***What are the right combinations of strategic messaging, declaratory policy, exercises, and strategy to ensure deterrence and assurance?***

While capabilities are necessary for deterrence and assurance, they are not sufficient. Nuclear and conventional capabilities must be coupled with strategic messaging, declaratory policy, the visible exercise of capabilities, and an overarching strategy to ensure credibility of U.S. deterrence and assurance architectures. These activities must be coordinated with our allies in East Asia and in NATO. These actions will broadcast both resolve to those who may seek to threaten or coerce the United States or its allies and the credible ability to employ the capabilities in the U.S. strategic stockpile.

All of the capabilities and tools used to showcase operational capability and credibility must be developed under the umbrella of a deterrence strategy. It is important, especially considering the security environment now facing the United States, to conduct the analytical activities that will enable the United States and its allies to get the policy and strategy right before decisions are made on the hardware and other capabilities necessary to carry out that policy.